Source Characterization

Objectives:

1. Characterize sources that have received little attention
2. Obtain source fingerprints using new techniques (e.g.,single particle mass spectrometry)

Fence Line:
- Coke Production
- Steel Production
- Tunnel (Vehicle Emissions)

Central Site:
- High Time Resolved Measurements

Dilution Sampling:
- Woodsmoke
  - treated wood
  - waste wood
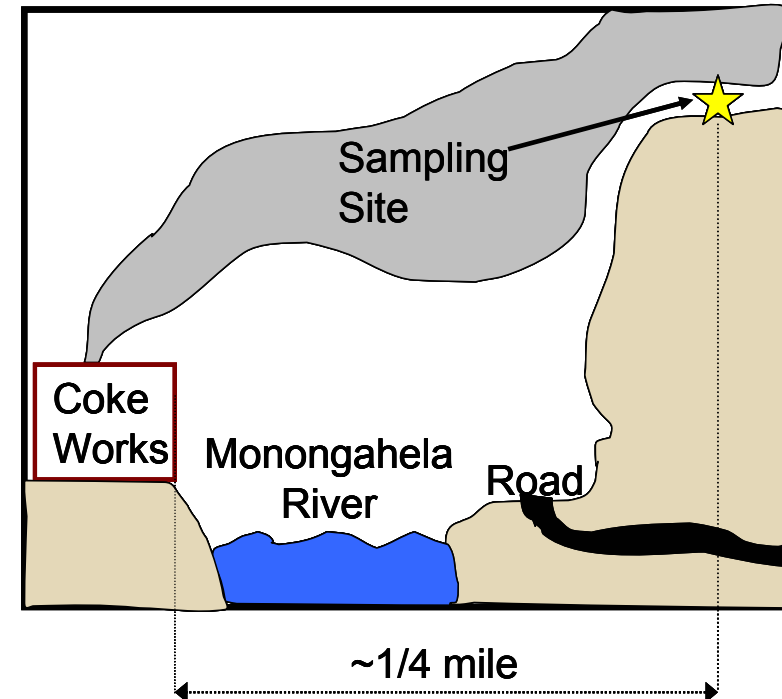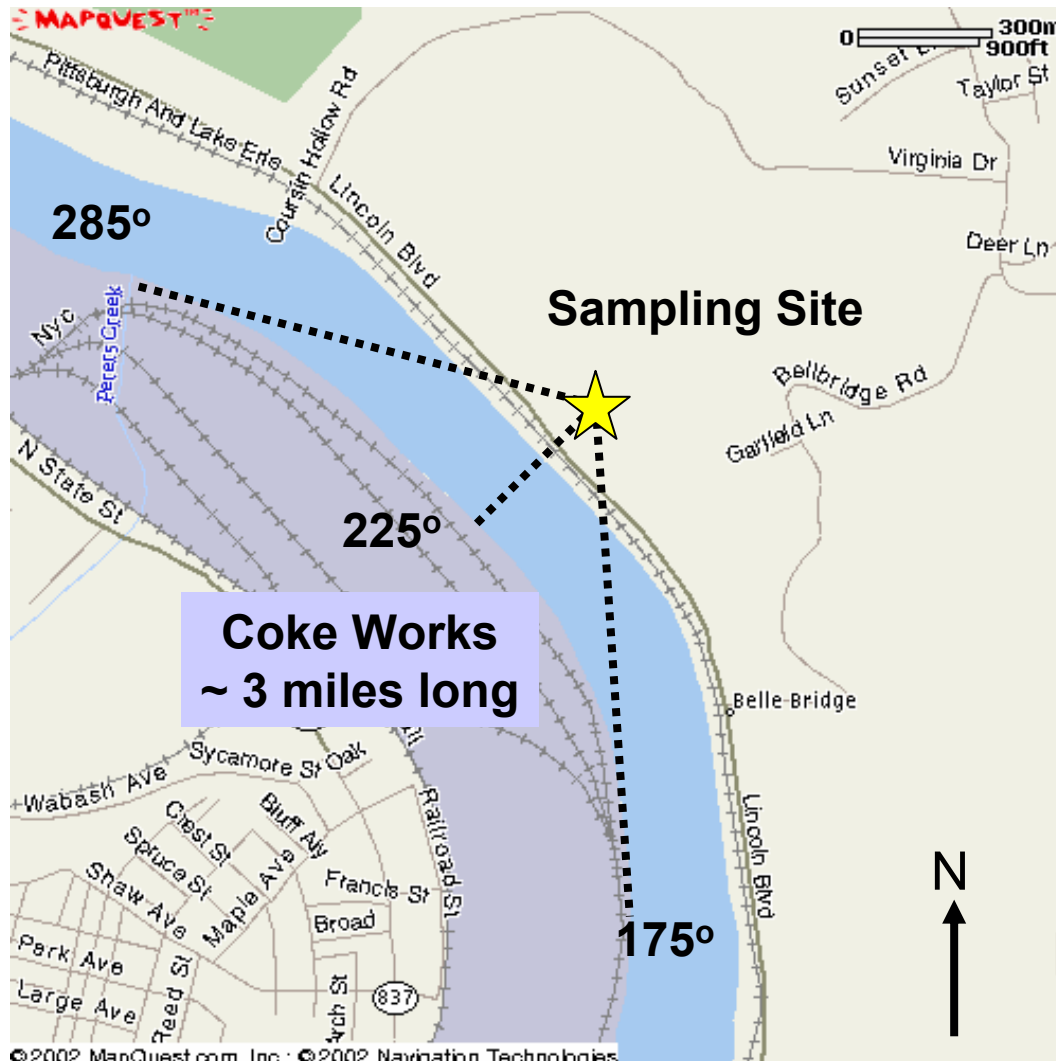- Coal Power plant
- Diesel

Other:
- Vegetation
- Road Dust (urban, rural)

Coke Production

Fence Line Sampling to Characterize Emissions from Coke Facility

Hilltop Sampling Site

Source Characterization with Single Particle Mass Spectrometer (RSMS-III)
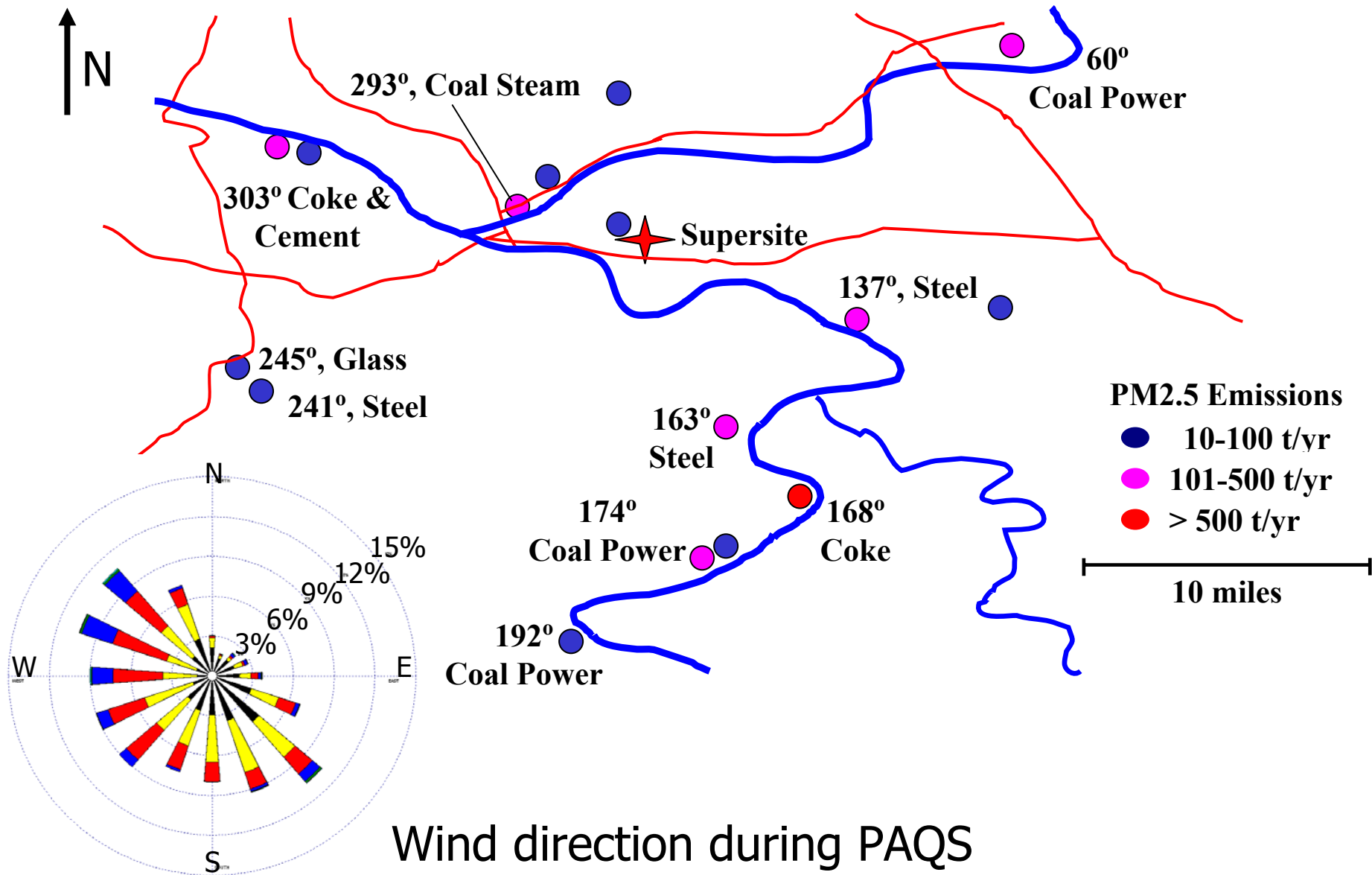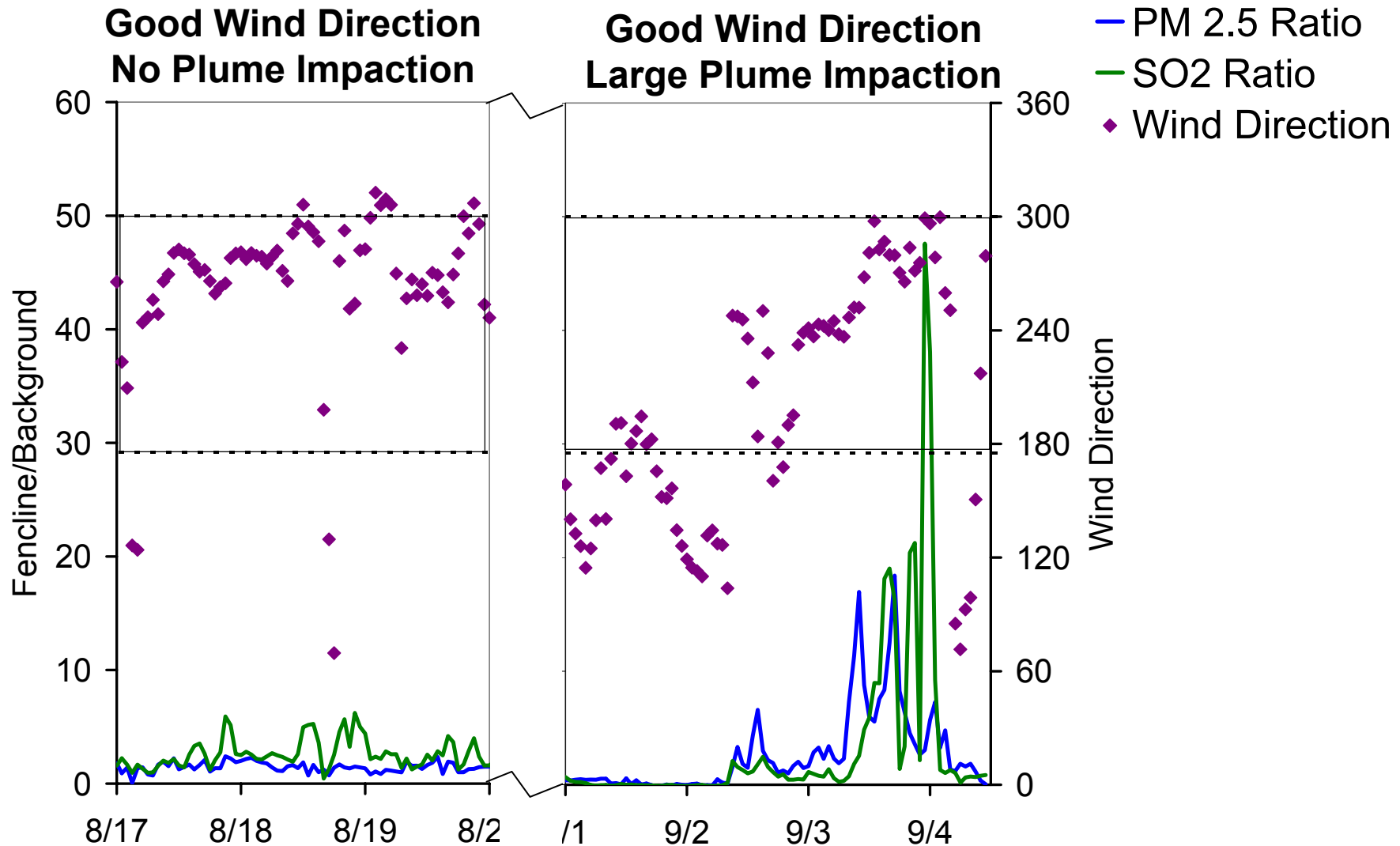

Filling the bag at source.
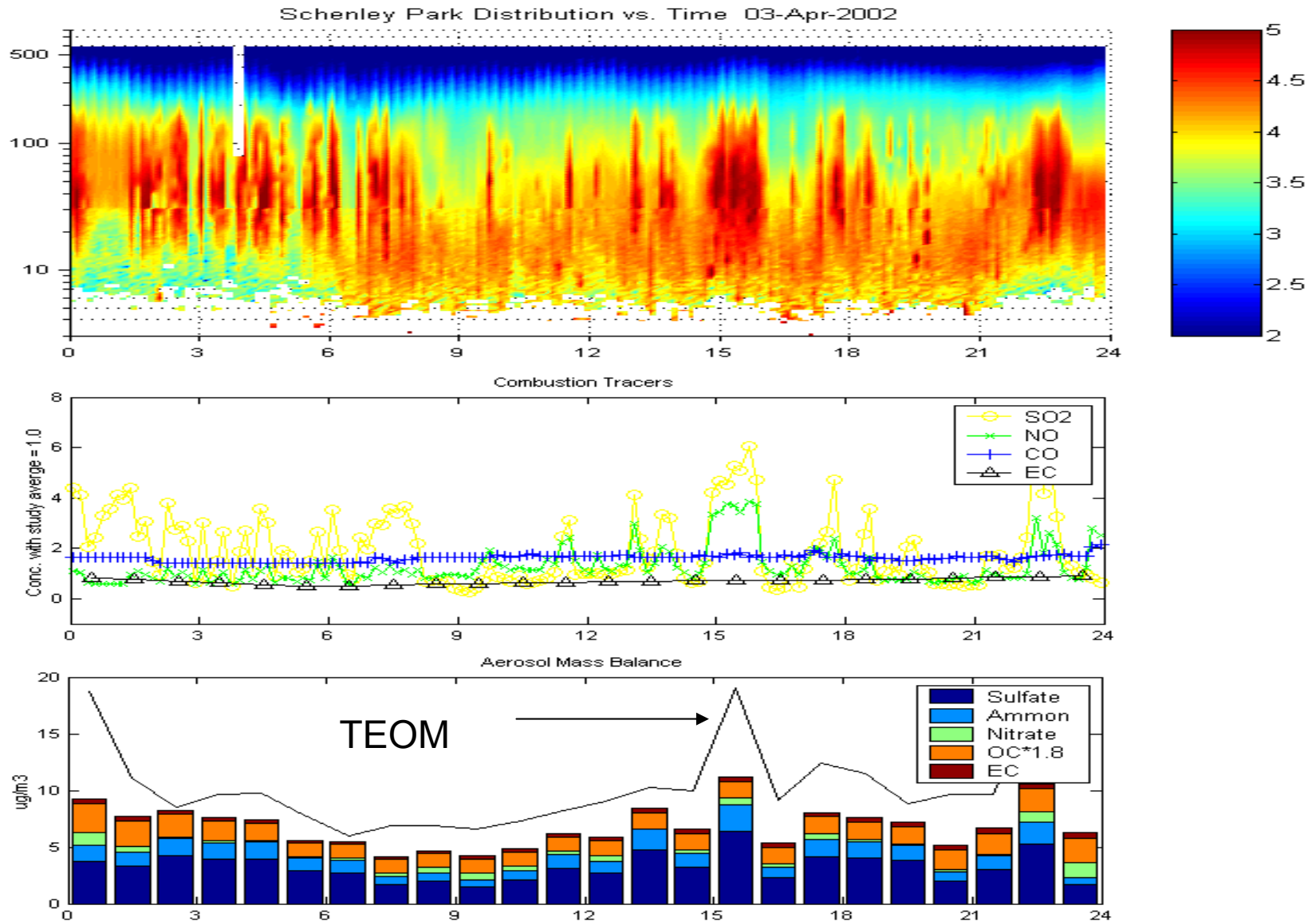

Transport.

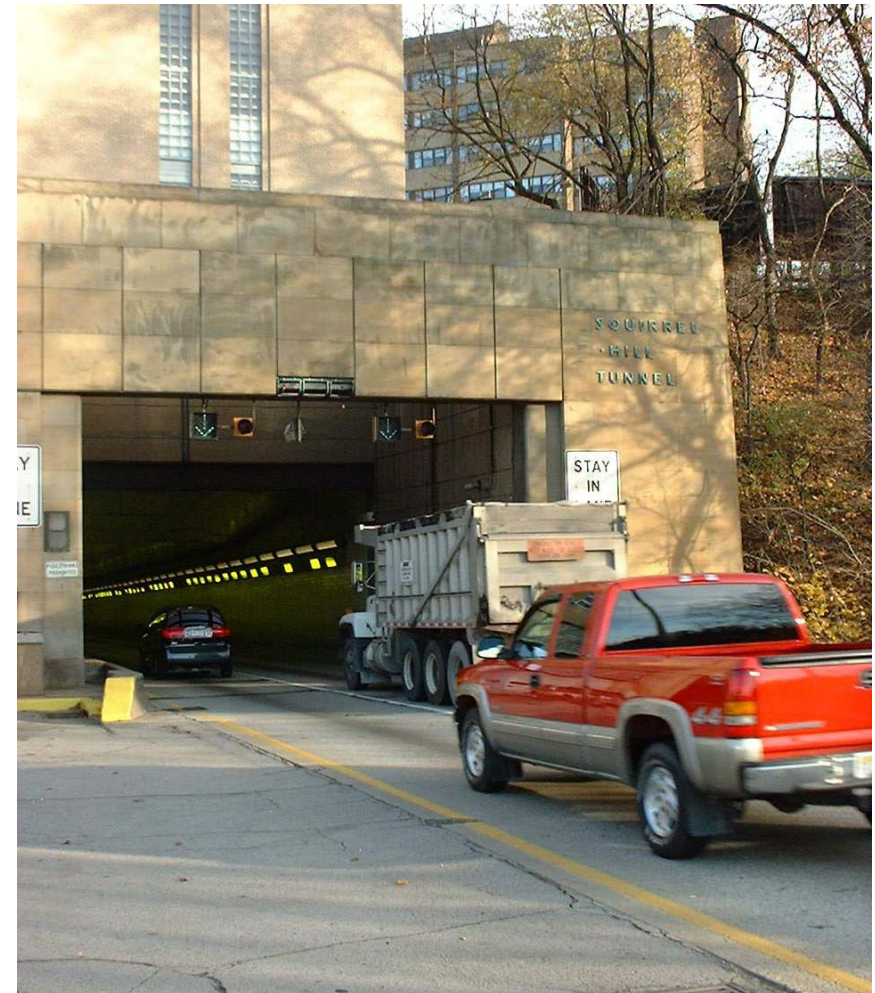**Analysis in laboratory with RSMS-III.**

Stationary PM$_{2.5}$ Sources

N

293º, Coal Steam

60º
Coal Power

303º Coke &
Cement

Supersite

137º, Steel

245º, Glass

241º, Steel

163º
Steel

PM2.5 Emissions

- 10-100 t/yr
- 101-500 t/yr
- > 500 t/yr

174º
Coal Power

168º
Coke

10 miles

192º
Coal Power

15%
12%
9%
6%
3%

N

W   E

S

Wind direction during PAQS

Meteorology and Plume Impaction at Coke Facility Fence Line Site

Evidence of Bellefield Boiler Plume

Schenley Park Distribution vs. Time 03-Apr-2002

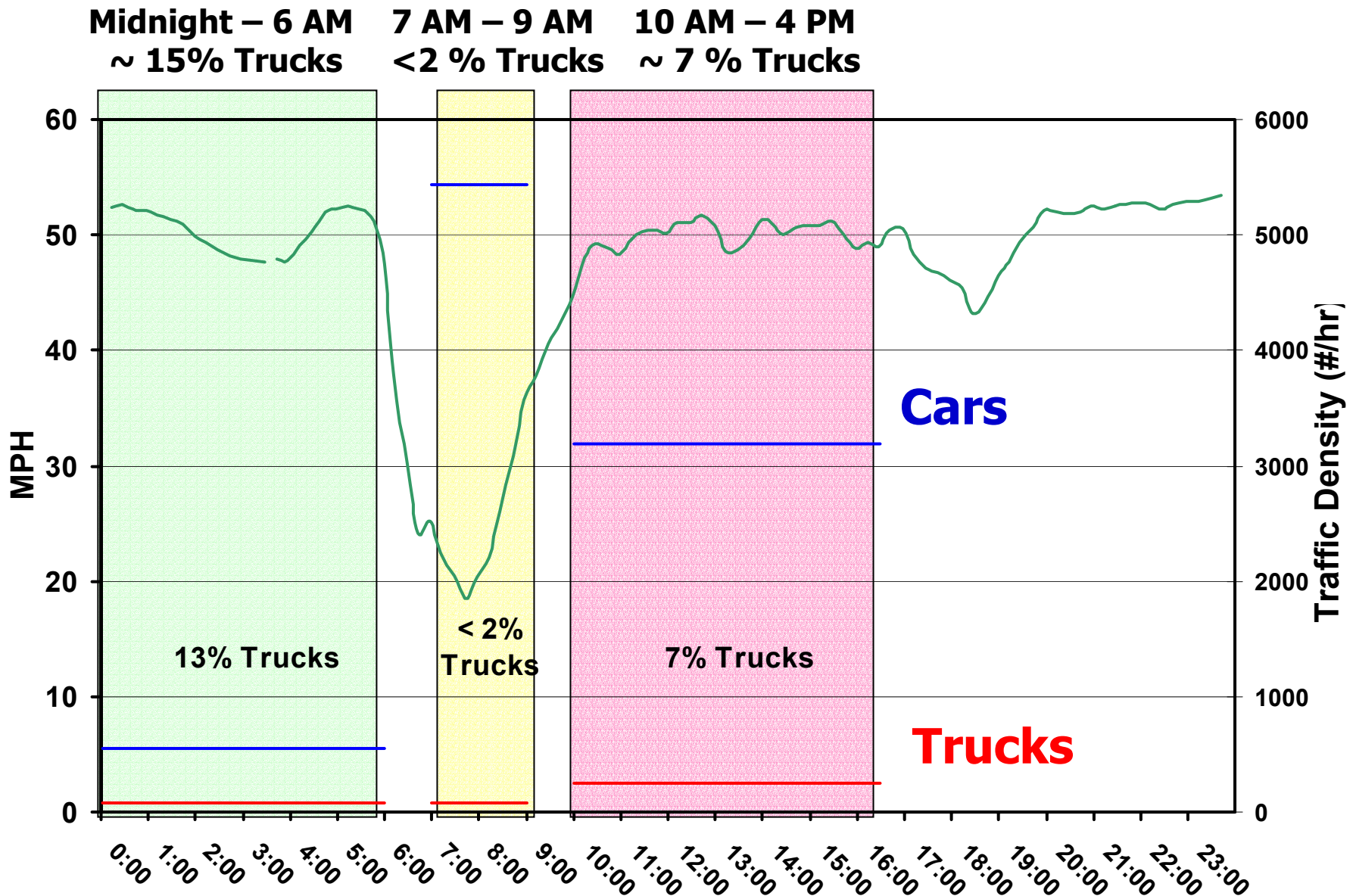Combustion Tracers

Aerosol Mass Balance

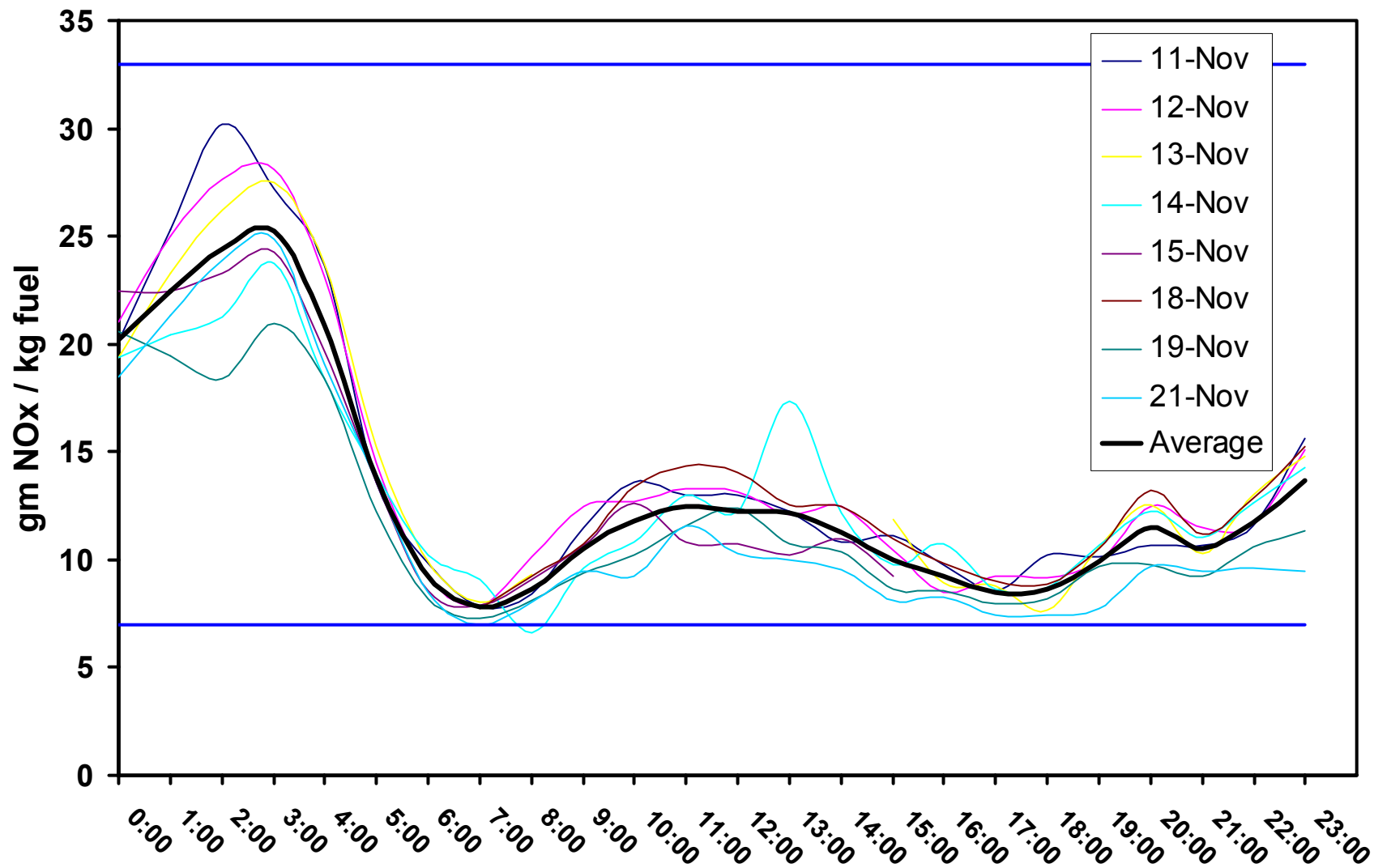TEOM

Squirrel Hill Tunnel Air Quality Study

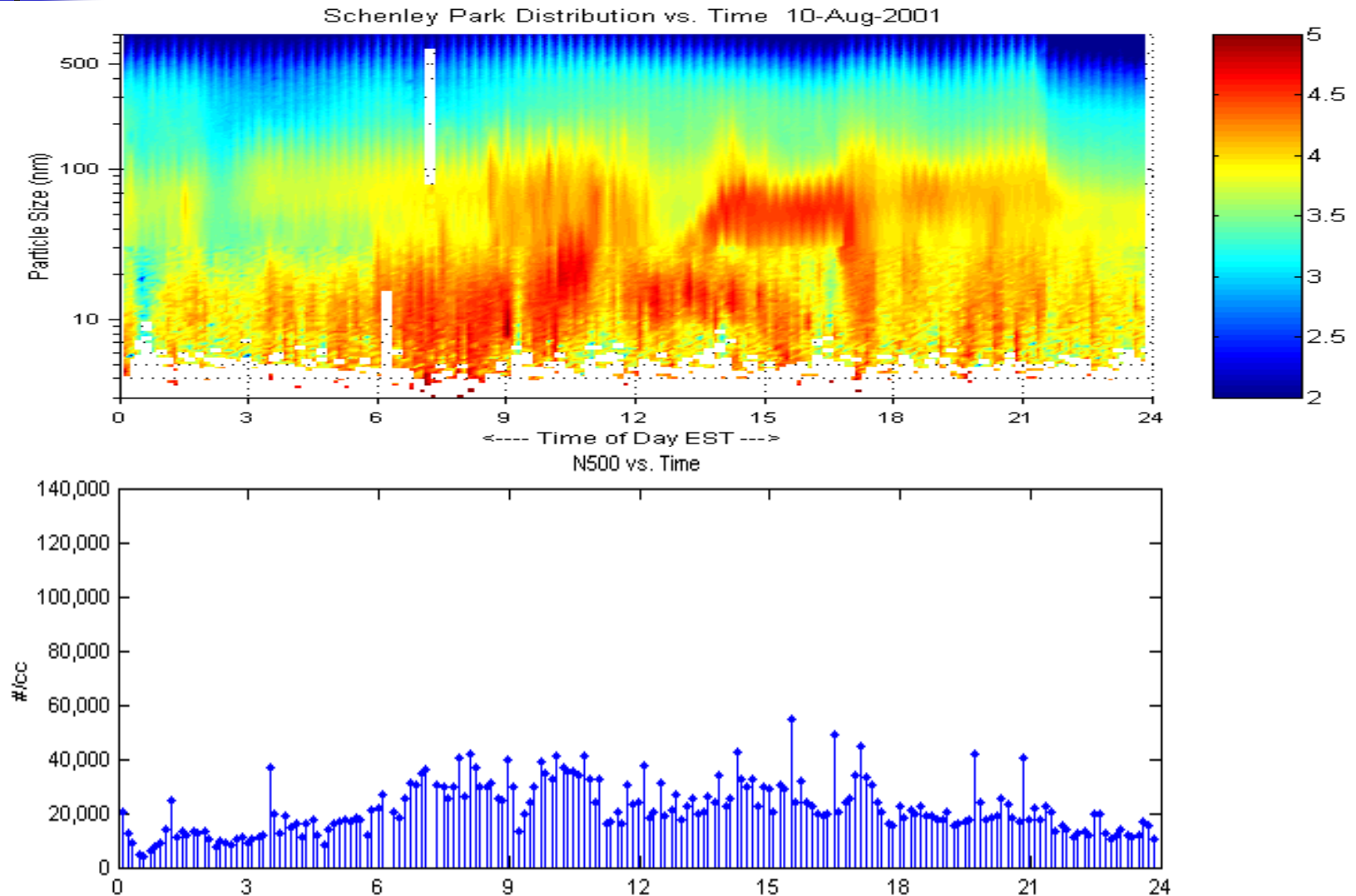# Sampling Ports

Sampling Periods for Tunnel Study

Diurnal NOx Emission Profile

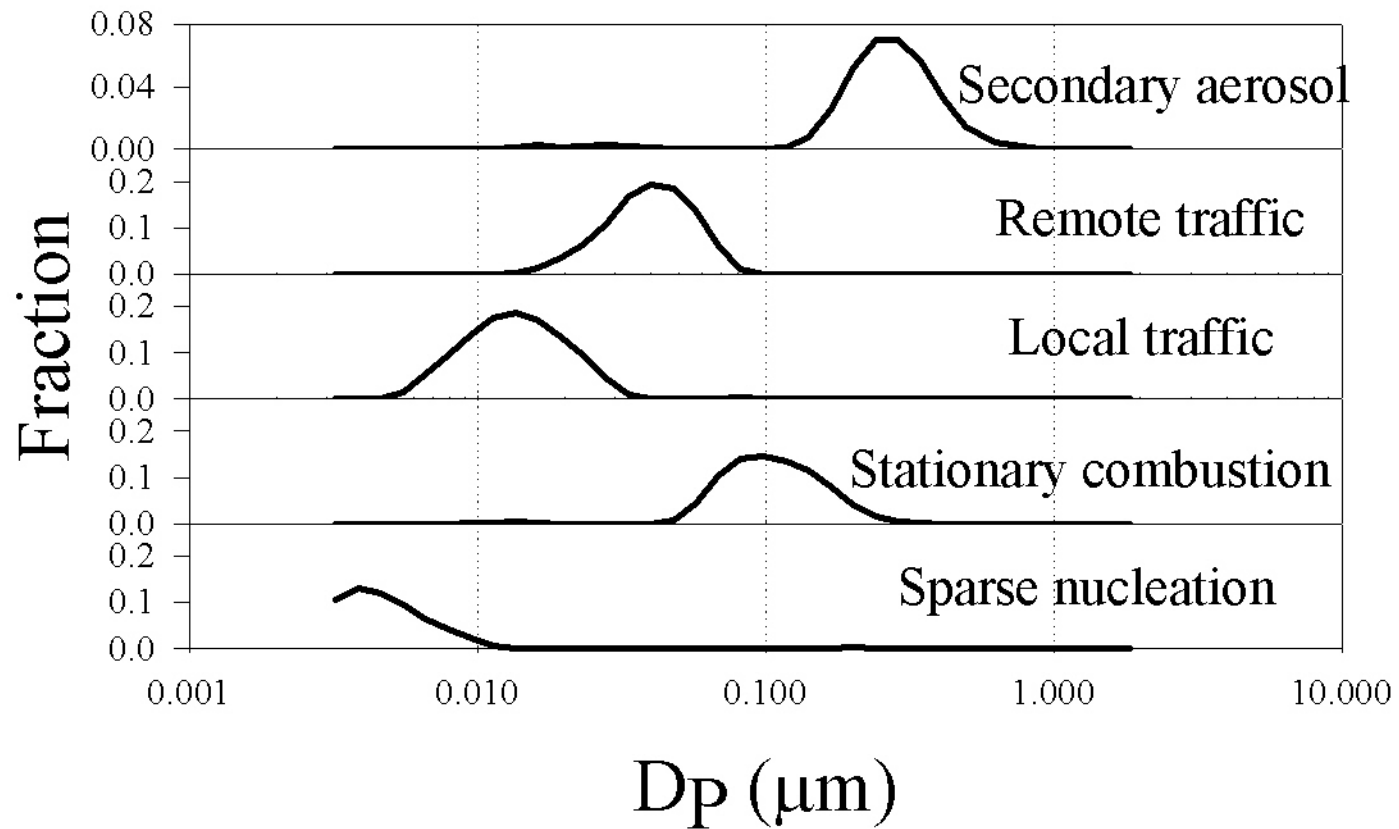# Typical PM Size Distribution Evolution
August 10, 2001

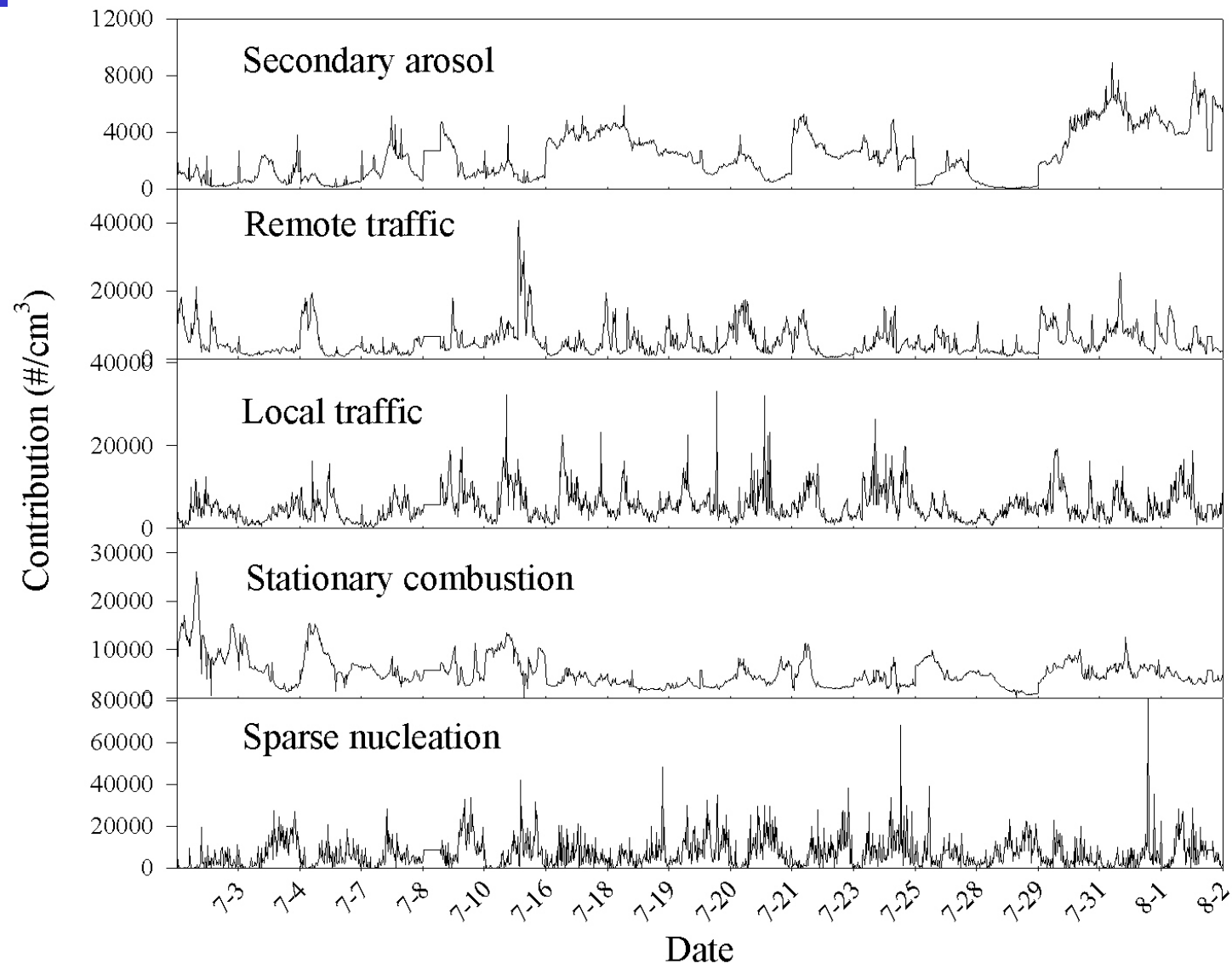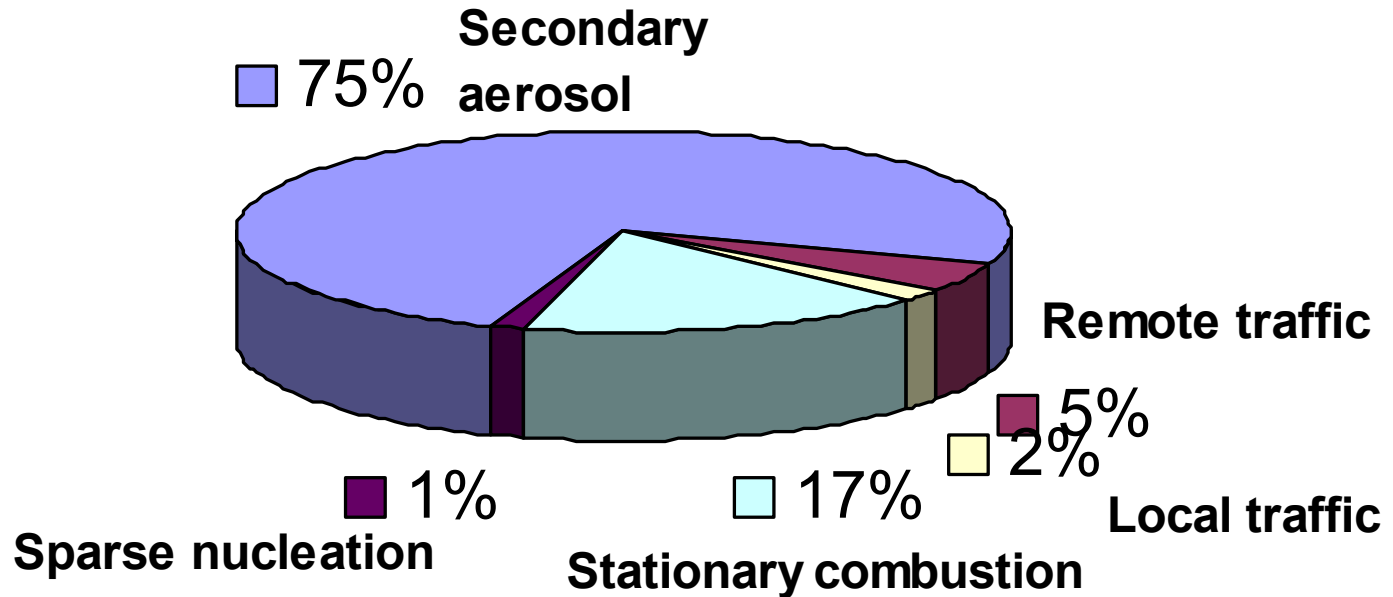Schenley Park Distribution vs. Time   10-Aug-2001

N500 vs. Time

Advanced Factor Analysis
for Size Distribution Data

Source contributions

Contributions from all sources to total aerosol volume concentration

Contributions from all sources to total aerosol number concentration